

WHAT IS CLAIMED IS:

1. A method for analyzing stored frames of time-stamped imaging data and time-stamped physiologic data obtained during a study of a patient during a plurality of cardiac cycles, said imaging data comprising frames representative of a succession of images of the patient's heart;

said method comprising utilizing a computer to:

analyze the stored physiologic data to determine times of a selected phase in the plurality of cardiac cycles;

select, in the plurality of cardiac cycles, stored images corresponding to the determined times of the selected phase; and

align and average images corresponding to the selected phase across the plurality of cardiac cycles to produce a single representative frame of image data.

2. A method in accordance with Claim 1 further comprising utilizing a computer to filter non-left ventricle anatomy from the single representative frame of image data.

3. A method in accordance with Claim 2 further comprising utilizing a computer to detect edges of a left ventricle wall in the filtered, single representative frame of image data.

4. A method in accordance with Claim 3 further comprising utilizing a computer to determine cardiac volume utilizing said filtered, single representative frame of image data.

5. A method in accordance with Claim 4 wherein said selected cardiac phase is a systolic phase and said determined cardiac volume is a systolic volume.

6. A method in accordance with Claim 4 wherein said selected cardiac phase is a diastolic phase and said determined cardiac volume is a diastolic volume.

7. A method wherein the method of Claim 4 is performed for both a selected systolic phase and a selected diastolic phase to determine both a systolic volume and a diastolic volume, and further comprising utilizing a computer to determine an ejection fraction utilizing said determined systolic volume and said determined diastolic volume.

8. A method in accordance with Claim 1 wherein the physiologic data comprises ECG waveform data.

9. A method in accordance with Claim 1 wherein the physiologic data comprises ECG waveform data.

10. A method in accordance with Claim 1 wherein said imaging data comprises X-ray imaging data.

11. A method in accordance with Claim 10 wherein the X-ray imaging data comprises data enhanced by injection of a contrast agent into the cardiovascular system of the patient.

12. A cardiology analysis apparatus for analyzing stored frames of time-stamped imaging data and time-stamped physiologic data obtained during a study of a patient during a plurality of cardiac cycles, said imaging data comprising frames representative of a succession of images of the patient's heart, said apparatus having a computer configured to:

analyze the stored physiologic data to determine times of a selected phase in the plurality of cardiac cycles;

select, in the plurality of cardiac cycles, stored images corresponding to the determined times of the selected phase; and

align and average images corresponding to the selected phase across the plurality of cardiac cycles to produce a single representative frame of image data.

13. An apparatus in accordance with Claim 12 wherein said computer is further configured to filter non-left ventricle anatomy from the single representative frame of image data.

14. An apparatus in accordance with Claim 13 wherein said computer is further configured to detect edges of a left ventricle wall in the filtered, single representative frame of image data.

15. An apparatus in accordance with Claim 14 wherein said computer is further configured to determine cardiac volume utilizing said filtered, single representative frame of image data.

16. An apparatus in accordance with Claim 15 wherein said selected cardiac phase is a systolic phase and said determined cardiac volume is a systolic volume.

17. An apparatus in accordance with Claim 15 wherein said selected cardiac phase is a diastolic phase and said determined cardiac volume is a diastolic volume.

18. An apparatus in accordance with Claim 15 wherein for both a selected systolic phase and a selected diastolic phase, said computer is configured to determine both a systolic volume and a diastolic volume, and said computer is further configured to determine an ejection fraction utilizing said determined systolic volume and said determined diastolic volume.

19. An apparatus in accordance with Claim 12 wherein said computer is configured to utilize physiologic data comprising ECG waveform data.

20. An apparatus in accordance with Claim 12 wherein said computer is configured to utilize physiologic data comprising ECG waveform measurement data.

21. An apparatus in accordance with Claim 12 wherein said computer is configured to utilize imaging data comprising X-ray imaging data.

22. A method for analyzing stored frames of time-stamped cyclical image data obtained during a study of an object during a plurality of cycles, said method comprising utilizing a computer to:

analyze the stored time-stamped cyclical image data to determine time of a selected phase of the cycle;

select, in the plurality of cycles of time-stamped cyclical image data, stored images corresponding to the determined times of the selected phase; and

align and average images corresponding to the selected phase across the plurality of cycles to produce a single representative frame of image data.

23. An analysis apparatus for analyzing stored frames of time-stamped cyclical imaging data and time-stamped waveform data obtained during a study of an object during a plurality of cycles, said imaging data comprising frames representative of a succession of images of the object, said apparatus having a computer configured to:

analyze the stored waveform data to determine times of a selected phase in the plurality of cycles;

select, in the plurality of cycles, stored images corresponding to the determined times of the selected phase; and

align and average images corresponding to the selected phase across the plurality of cycles to produce a single representative frame of image data.